

**EPA Superfund  
Record of Decision Amendment:**

**HANFORD 200-AREA (USDOE)  
EPA ID: WA1890090078  
OU 14  
BENTON COUNTY, WA  
09/25/1997**

<IMG SRC 971010>

United States Environmental Protection Agency  
Region X  
1200 Sixth Avenue  
Seattle, Washington 98101

U.S. Department of Energy  
Environmental Restoration Disposal Facility  
Hanford Site - 200 Area  
Benton County, Washington

Amended Record of Decision  
Decision Summary and Responsiveness Summary

## TABLE OF CONTENTS

SECTION	PAGE NUMBER
DECLARATION	
Site Name and Location	i
Statement of Basis and Purpose	i
Assessment of the Site	i
Description of the Amendment to the Remedy	i
Declaration	ii
DECISION SUMMARY	
Introduction	1
Site History	2
Remedy Selected in the ROD	6
Description of the Modified Remedy	8
Evaluation of Alternatives	9
Selected Amended Remedy for the ERDF	12
Statutory Determination	12
Documentation of Significant Changes	12
RESPONSIVENESS SUMMARY	13
FIGURES	
Figure 1. Hanford Site Map	4
Figure 2. Existing Disposal Cells and Phase II Expansion	5

## DECLARATION OF THE RECORD OF DECISION

### SITE NAME AND LOCATION

U.S. Department of Energy  
Environmental Restoration Disposal Facility  
Hanford Site - 200 Area  
Benton County, Washington

### STATEMENT OF BASIS AND PURPOSE

This Record of Decision (ROD) Amendment has been developed in accordance with the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (CERCLA), as amended by the Superfund Amendments and Reauthorization Act of 1986 (SARA), 42 U.S.C. Section 9601 et. seq, and to the extent practicable, the National Oil and Hazardous Substances Pollution Contingency Plan (NCP), 40 Code of Federal Regulations (CFR) Part 300. This ROD Amendment is based on the Administrative Record for the Environmental Restoration Disposal Facility.

The State of Washington concurs with the ROD Amendment.

### ASSESSMENT OF THE SITE

Actual or threatened releases of hazardous substances from the operable units on the Hanford Site, if not addressed by implementing the response action selected in the ROD, as changed by this ROD Amendment, may present an imminent and substantial endangerment to the public health, welfare, or the environment.

### DESCRIPTION OF THE AMENDMENT TO THE REMEDY

The changes to the original ROD addressed in this Amendment are explained in the following sections.

**ERDF Expansion.** The ERDF ROD specifies that expansion of the facility would be authorized as-needed through the ROD amendment process. Based on estimated remediation waste volumes presented in the ERDF ROD, additional disposal cells were anticipated. This Amendment authorizes two additional ERDF cells to be constructed and operated for disposal of Hanford Site remediation waste. The Phase II construction shall be located entirely within the 4.1 square kilometer (1.6 square miles) area selected for ERDF, as defined in the ERDF ROD.

The approved design of ERDF is a single, 70-ft-deep trench consisting of two side-by-side cells with final dimensions of 1,420-ft long by 720-ft wide at the top of the trench. The facility is equipped with a RCRA double-liner and leachate collection and recovery system. The same RCRA design selected for the existing ERDF disposal cells shall be used for the Phase II cells. The design phase shall also include an evaluation of vadose zone monitoring. The detailed design shall be submitted to the EPA for approval prior to construction of the ERDF facility.

**Treatment at ERDF.** The selected remedial alternative in existing 100 and 300 Area waste site remediation RODs is removal, treatment if required, and disposal at ERDF. Treatment would be required if the concentration of contaminants in the waste is above land disposal restriction standards found in the Federal and State hazardous waste regulations or above the ERDF waste acceptance criteria. This Amendment provides the option of conducting remediation waste treatment in containers at ERDF instead of the operable unit, prior to disposal. This option does not preclude treatment at the operable units. Treatment at ERDF would be limited to stabilization in containers and encapsulation. In addition, all substantive federal and state requirements governing hazardous waste treatment in containers, such as secondary containment, shall be met as part of treatment at ERDF. The decision whether to perform remediation waste treatment, and the specific treatment needed, will be documented as part of the remedy selection and remedial design process for the operable unit or waste site of origination. The decision concerning where treatment occurs would be made in coordination with ERDF.

### DECLARATION

Although this ROD Amendment changes components of the remedy selected in the original ROD, the remedy, as modified, continues to be protective of human health and the environment. The remedy, as amended, complies with Federal and state requirements that are legally applicable or relevant and appropriate and is cost effective. This remedy utilizes permanent solutions to the maximum extent practicable for this site. Treatment of wastes will be addressed in the operable unit decision documents. As a consequence, the statutory preference for treatment as a principal element will be addressed in those current and future documents rather than in this ROD.

Because this remedy will result in hazardous substances remaining on site above health-based levels, a review will be conducted at least every five years after the commencement of remedial actions to ensure that the remedy continues to provide adequate protection of human health and the environment.

Signature sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.

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Signature sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.

<IMG SRC 97101B>

Signature sheet for the Amendment to the Record of Decision for the USDOE Hanford Environmental Restoration Disposal Facility between the United States Department of Energy and the United States Environmental Protection Agency, with concurrence by the Washington State Department of Ecology.

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## DECISION SUMMARY

### USDOE Environmental Restoration Disposal Facility Record of Decision Amendment

#### I. INTRODUCTION

This document presents an Amendment to the Record of Decision (ROD) for the Environmental Restoration Disposal Facility at the Hanford Site.

#### Site Name and Location

USDOE Hanford Environmental Restoration Disposal Facility  
Hanford Site - 200 Area  
Benton County, Washington

#### Lead and Support Agencies

The lead regulatory agency for this action is the U.S. Environmental Protection Agency (EPA). The U.S. Department of Energy (DOE) and the Washington Department of Ecology (Ecology) both concur with the need and justification to increase the size of the disposal facility and allow for stabilization and encapsulation capabilities at the ERDF site. The three agencies participated jointly in the decision and preparation of this document.

#### Statutory Citation for a ROD Amendment

The Environmental Restoration Disposal Facility (ERDF) ROD was signed by the EPA, Ecology, and the DOE in January 1995. In 40 CFR 300.435(c)(2) the National Contingency Plan provisions are specified for addressing and documenting changes to the selected remedy after issuance of a ROD. An Explanation of Significant Differences (ESD) was issued in August of 1996. This ROD Amendment documents fundamental changes to the remedy set forth in the 1995 ERDF ROD. Public participation and documentation procedures have been followed as specified at 40 CFR 300.435(c)(2)(ii).

#### Need for the ROD Amendment

This amendment is necessary for the following reason:

- The ERDF is currently identified in the 100 Area ROD and ROD Amendment, the 300 Area ROD, and several Removal Action Memoranda as the location to dispose of waste resulting from actions in these areas. The estimated waste volume to be generated from these actions is 1.5 to 2.0 million cubic yards. The total capacity of the existing disposal facility is approximately one million cubic yards. Expansion is necessary to continue remediation of the Hanford Site.

#### Public Involvement

A newspaper notice was placed in the Tri-City Herald on August 3, 1997 announcing the availability of the proposed amendment and the start of the public comment period. Approximately fourteen hundred copies of a fact sheet describing the amendment proposal were mailed out. A public comment period was held from August 4 through September 3, 1997. No requests were received for a public meeting, therefore, no public meeting was held. Copies of the proposed plan were provided to the Hanford Advisory Board (HAB) Environmental Restoration (ER) Committee members. The proposed amendment was discussed with the HAB and the HAB-ER Committee at meetings in June, July, August, and September of 1997. The decision to amend the ROD is based on the Administrative Record for the ERDF. Locations where the Administrative Record may be found are listed below.

#### Administrative Record

This ROD Amendment will become part of the Administrative Record for ERDF, as required by 40 CFR 300.825(a)(2), and will be available to the public at the following locations:

ADMINISTRATIVE RECORD (Contains all project documents)

U.S. Department of Energy - Richland Operations Office  
Administrative Record Center  
2440 Stevens Center  
Richland, Washington 99352

## INFORMATION REPOSITORIES (Contain limited documentation)

University of Washington  
Suzzallo Library  
Government Publications Room  
Seattle, Washington 98195

Gonzaga University, Foley Center  
E. 502 Boone  
Spokane, Washington 99258

Portland State University  
Branford Price Millar Library  
SW Harrison and Park  
Portland, Oregon 97207

DOE Richland Public Reading Room  
Washington State University, Tri-Cities  
100 Sprout Road, Room 101L  
Richland, Washington 99352

## II. SITE HISTORY

In 1988, the Hanford Site was scored using the EPA's Hazard Ranking System. As a result of the scoring, the Hanford Site was added to the NPL in July 1989 as four sites (the 1100 Area, the 200 Area, the 300 Area, and the 100 Area). Each of these areas was further divided into operable units (a grouping of individual waste units based primarily on geographic area and common waste sources). These operable units contain contamination in the form of hazardous waste, radioactive/hazardous mixed waste, and other CERCLA hazardous substances.

In anticipation of the NPL listing, DOE, EPA, and Ecology entered into the Hanford Federal Facility Agreement and Consent Order in May 1989. This agreement established a procedural framework and schedule for developing, implementing, and monitoring remedial response actions at Hanford. The agreement also addresses RCRA compliance and permitting.

The fundamental objective of ERDF is to support the timely removal and disposal of contaminants from various locations within the Hanford Site. Several Hanford Site remediation RODs and Removal Action Memoranda identify ERDF as the location for disposal of resulting waste. The Hanford Site and ERDF location are shown on Figure 1.

Construction of the first two ERDF disposal cells began in February 1995, and the first waste was placed in ERDF on July 1, 1996. As of June 30, 1997, ERDF has received 248,256 cubic yards of waste. The ERDF is scheduled to accept approximately 360,000 cubic yards of waste material in fiscal year 1997. The two operating disposal cells have a total maximum waste capacity of approximately one million cubic yards. In addition to the disposal cells, the ERDF site contains a transportation staging area, an administration building, worker offices and a change trailer, a waste container staging area, leachate collection tanks, a spoils pile used for daily operational cover, an employee parking area, a truck scale, and haul roads.

The layout and size of the existing and proposed Phase II cells are shown in Figure 2. The deep, single-trench configuration used for the first two cells and selected for Phase II construction minimizes the areal extent of the waste facility and offers the following advantages in comparison to other configurations:

- Less habitat disruption
- Reduced material needs
- Reduced leachate generation
- Lower costs for the trench liner and the interim and final covers.

The operation of ERDF has proven to be a cost-effective means to handle Hanford Site remediation waste. To date, the operating cost to dispose of waste at ERDF has averaged approximately \$30 per cubic yard from the start of operation. The total life-cycle costs for the facility equate to approximately \$80 per cubic yard. No other more cost-effective waste disposal alternative has yet been identified to handle Hanford Site remediation waste.

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### III. REMEDY SELECTED IN THE ROD

The major components of the selected remedy implemented as a result of the 1995 ERDF ROD include the following:

- Initial construction and operation of the first two disposal cells. These cells are expected to provide an approximate waste disposal capacity of one million yd<sup>3</sup>. The cells are designed and constructed to RCRA minimum technological requirements (MTRs) (40 CFR Part 264, Subpart N). The decisions to expand the landfill in the future will be documented by amending the ERDF ROD or as part of the RODs for the Hanford operable units.
- The ERDF site will cover a maximum of 4.1 km<sup>2</sup> (1.6 mi<sup>2</sup>) on the Central Plateau, southeast of the 200 West Area and southwest of the 200 East Area. The initial construction of the facility required 165 acres of this area.
- The ERDF facility will provide sufficient leachate storage capacity to ensure uninterrupted operations, and will comply with 40 CFR Part 264, Subpart N.
- Surface water run-on/run-off will be controlled at the landfill and other areas of the facility that are potentially contaminated.
- Air monitoring will be accomplished by placement at ERDF of real-time air monitors for radioactive contaminants and air samplers for hazardous and radioactive constituents to detect any offsite migration of contaminants. The current air monitoring system satisfies this requirement.
- Groundwater monitoring will be performed in accordance with 40 CFR Part 264, Subpart F. The current monitoring system complies with these requirements.
- Appropriate measures to protect facility workers and the public will continue to be employed during ERDF operations, including contamination control and dust mitigation, and protection of personnel from industrial hazards presented by ERDF operations. Protective measures shall comply with applicable requirements found in the Occupational Safety and Health Act (OSHA), Washington Industrial Safety and Health Act (WISHA), and other safety regulations or ERDF-specific safety requirements. Energy shall also comply with 40 CFR §300.150.
- Waste acceptance criteria have been developed by DOE and approved by EPA in accordance with applicable or relevant and appropriate requirements (ARARs), risk/performance assessments, ERDF-specific safety documentation, and worker protection requirements. Operable unit-specific waste disposal and treatment decisions will continue to be made as part of the remedy selection and cleanup decision process for each operable unit.
- The ERDF landfill will be closed by placing a modified RCRA-compliant closure cover over the waste. The cover will prevent direct exposure to the waste and will include a vegetated surface layer of fine-grained soils to retain moisture and encourage evapotranspiration, thereby minimizing infiltration and vadose zone transport of contaminants to groundwater. The upper 50 cm (20 in.) of the soil cover system will be composed of an admixture of silt and gravels. This layer is intended to both reduce infiltration through the cover and enhance the resistance of the cover to burrowing animals and long-term wind erosion. The RCRA-compliant cover will be modified by providing a total of approximately 15 feet of cover material to deter intrusion. It is anticipated that additional research into closure covers may result in site-specific enhancements to RCRA-compliant designs. Prior to cover construction, closure cover designs will be evaluated and the most appropriate closure cover design will be selected for construction. Construction of the cover will occur on an incremental basis, as the trench is expanded. The design will, at a minimum, comply with applicable RCRA requirements found at 40 CFR Part 264, Subpart N. Basalt from Hanford Site borrow pits will not be required for construction of the ERDF closure cover.
- Institutional controls shall be imposed to restrict public access to the landfill. Current Hanford Site access restrictions are in place.
- Wash water used to decontaminate site equipment shall be managed in accordance with appropriate requirements. The approved operations plan addresses handling of decontamination waters.
- An ERDF operations plan has been approved by EPA.



- DOE commits to the implementation of the Mitigation Action Plan developed in coordination with the Natural Resource Trustees for additional mitigation measures.

The Explanation of Significant Differences to the ERDF ROD, issued in July of 1996, documented authorization of the following changes:

- Any Hanford environmental cleanup waste generated as a result of CERCLA or RCRA cleanup actions (IDW, decontamination and decommissioning wastes, RCRA past-practice wastes) is eligible for disposal provided it meets the ERDF Waste Acceptance Criteria and provided that the appropriate decision documents are in place. Additionally, nonprocess waste (e.g., contaminated soil, debris) generated from closure of inactive RCRA TSD units may be placed in ERDF provided that the units (1) are within the boundaries of a CERCLA or RCRA past-practice operable unit, (2) the closure wastes are sufficiently similar to CERCLA or RCRA past-practice wastes placed in ERDF, (3) the ERDF waste acceptance criteria are satisfied, and (4) the appropriate CERCLA decision documents are in place. Revision of the RCRA Permit and closure plans may be required.
- The ERDF leachate may be collected and stored at the ERDF for use within the trench, as appropriate. Appropriate uses are limited to dust suppression and waste compaction. The leachate must be sampled prior to use to ensure compliance with Land Disposal Restrictions (LDRs), ERDF waste acceptance criteria, and other health-based limits (whichever is more restrictive). Leachate in excess of ERDF recycling capacity or acceptable contaminant levels will be sent to the Effluent Treatment Facility or another approved facility for management.

#### **IV. DESCRIPTION OF THE MODIFIED REMEDY**

The changes to the original ROD addressed in this Amendment are explained in the following sections.

**ERDF Expansion.** The ERDF ROD specifies that expansion of the facility would be authorized as-needed through the ROD amendment process. Based on estimated remediation waste volumes presented in the ERDF ROD, additional disposal cells were anticipated. Two additional ERDF cells shall be constructed and operated for disposal of Hanford Site remediation waste. Remediation volume estimates in final and planned cleanup decision documents, prepared since the ERDF ROD was issued, support the need for additional capacity. The Phase II construction shall be located entirely within the 4.1 km<sup>2</sup> (1.6 mi<sup>2</sup>) area selected for ERDF, as defined in the ERDF ROD.

The current design of ERDF is a single, 70-ft-deep trench consisting of two side-by-side cells with final dimensions of 1,420-ft long by 720-ft wide at the top of the trench. The facility is equipped with a RCRA double-liner and a leachate collection and recovery system. The same RCRA design selected for the existing ERDF disposal cells shall be used for the Phase II cells. The design phase shall also include an evaluation of vadose zone monitoring. The detailed design shall be submitted to the EPA for approval prior to construction of the ERDF.

**Treatment at ERDF.** The selected remedial alternative in existing 100 and 300 Area waste site remediation RODs is removal, treatment if required, and disposal at ERDF. Treatment would be required if the concentration of contaminants in the waste is above land disposal restriction standards found in the Federal and State hazardous waste regulations or above the ERDF waste acceptance criteria. This Amendment provides the option of conducting remediation waste treatment at ERDF instead of the operable unit, prior to disposal. This option does not preclude treatment at the operable units. Treatment at ERDF would be limited to stabilization and encapsulation in containers. In addition, all substantive federal and state requirements governing hazardous waste treatment in containers, such as secondary containment, shall be met as part of treatment at ERDF. The decision whether to perform remediation waste treatment, and the specific treatment needed, will be documented as part of the remedy selection and remedial design process for the operable unit or waste site of origination. The decision concerning where treatment occurs would be made in coordination with ERDF.

#### **V. EVALUATION OF ALTERNATIVES**

The NCP establishes nine criteria for evaluating remedial action alternatives. These criteria are divided into three categories of weighted importance which include: threshold, balancing, and modifying criteria. All remedies must meet the threshold criteria to be considered. The seven balancing and modifying criteria help describe relative differences between the alternatives. A discussion of the original remedy and the modified remedy relative to the nine criteria evaluation is required by CERCLA.

## Summary of Alternatives

The key elements of each alternative are described and briefly discussed below.

- Alternative 1 - No Action. The no action alternative consists of not constructing the Phase II expansion of the ERDF trench to accommodate additional waste from waste site remediation.
- Alternative 2 - ERDF Phase II Construction. Two additional cells would be constructed at ERDF to provide additional capacity for ongoing remediation of the 100, 200 and 300 Areas.
- The ERDF Phase II construction would use the same design as the first two disposal cells; therefore, the previous evaluation of the threshold and balancing criteria in the 1995 proposed plan and ROD remains applicable.
- Alternative 3 - Treatment at the Operable Unit. Treatment would continue to be performed only at the operable unit.
- Alternative 4 - Treatment at ERDF. Treatment of waste coming from 100, 200 and 300 Area remedial actions and from deactivation and decommissioning activities would be performed at the ERDF. Treatment determinations would still be documented as part of the remedy selection process for the operable unit or decontamination and decommissioning activity. This option does not preclude treatment at the operable units.

## Threshold Criteria

### 1. Overall Protection of Human Health and the Environment

The no action alternative does not satisfy the criterion of overall protection of human health and the environment. Once the original ERDF capacity was utilized, remediation of the 100 and 300 Areas would cease unless alternative disposal options could be developed. For this reason, the no action alternative is not evaluated further.

The construction of the expansion would satisfy overall protection of human health and the environment. The same approach to treatment would be implemented whether treatment was conducted at ERDF or at the operable unit where the waste originated. Therefore, both alternatives will be equally protective of human health and the environment, effective in the short-term and long-term, and implementable.

### 2. Compliance with Federal or State Environmental Standards (ARARs)

The existing ERDF ROD and this amendment will both comply with ARARs. The key ARAR for the facility is the Resource Conservation and Recovery Act - Title 42 USC 6901 et seq., Subtitle C. The Resource Conservation and Recovery Act (RCRA) regulates the generation, transportation, storage, treatment, and disposal of hazardous waste. These regulations also provide authority for the cleanup of spills and environmental releases of hazardous waste to the environment as a result of past practices. Hazardous waste management regulations promulgated pursuant to RCRA are codified at 40 CFR Part 260 through 268. Washington State Dangerous Waste Regulations implement the federal hazardous waste regulations and are administered by Ecology. These state regulations are codified in Chapter 173-303 of the Washington Administrative Code ("WAC"). Regulations established under RCRA are applicable to the ERDF because the facility is expected to receive hazardous waste and operation of the facility may generate hazardous waste.

The most significant ARARs for construction and operation of the disposal facility receiving hazardous/dangerous waste include federal RCRA landfill requirements specified in 40 CFR Part 264, Washington State dangerous waste landfill requirements specified in WAC 173-303-665, RCRA LDRs specified in 40 CFR Part 268 and WAC 173-303-140, and Toxic Substances Control Act (TSCA) requirements specified in 40 CFR Part 761.

The key ARARs for the storage and treatment of waste at the ERDF are specified in 40 CFR Part 268 Subpart E - Prohibitions on Storage; and 40 CFR Part 264 Subpart I and WAC 173-303-630 - Use and Management of Containers.

## Balancing Criteria

### 3. Long-term Effectiveness and Permanence

Expansion of the ERDF would provide long term isolation of waste coming from remedial actions at the Hanford Site.

The effectiveness of treatment by stabilization or encapsulation would be the same, regardless of where

treatment is performed.

#### 4. Reduction of Toxicity, Mobility, and Volume Through Treatment

Treatment of the incoming waste at ERDF is part of this ROD amendment and only includes stabilization and encapsulation. Waste treatment will generally be considered in the feasibility studies, proposed plans, RODs, and design documents for the individual operable units. Waste coming to and treated at the ERDF shall meet all ARARs and satisfy ERDF waste acceptance criteria prior to disposal.

The goal of treatment by stabilization or encapsulation is reduction of mobility and subsequent reduction of toxic elements released to the environment. The same reduction of mobility and toxicity would be accomplished regardless of the location where treatment is performed.

#### 5. Short-Term Effectiveness

The existing ERDF ROD and this amendment have the same approach to construction of the facility. Therefore, both are essentially the same with respect to meeting this criterion,

Risks posed to the community, workers, or the environment as a result of the treatment location would be negligible. Environmental risk would be lower at the operable unit due to treatment being done prior to shipment.

#### 6. Implementability

Similar to Phase I, the Phase II expansion has a double liner. Therefore, the complexity of the task ranks low in terms of technical implementability.

Stabilization or encapsulation treatment technology is considered implementable regardless of the location. A single centralized treatment location is considered more efficient and, therefore, less difficult to implement than providing separate treatment units at each remedial action site. An added advantage would likely be consistency of the treatment technology when applied at a central location rather than at several different locations.

#### 7. Cost

The estimated cost in the existing ERDF ROD was \$65 million. The actual cost for the facility design and construction was \$45.8 million. It is estimated the construction of the next two disposal cells would cost approximately \$18 million from design through the start of operation.

Costs for conducting treatment activities at ERDF are considered to be less than conducting treatment at each operable unit based on the amount of material to be shipped. Also, a centralized treatment area would reduce the need for multiple treatment systems and associated contracts and operating expenses. A reduction in transportation and handling costs would also be realized as the treatment agents (e.g., cement), which increase the volume and weight, would be added to the waste after shipment to ERDF. The cost to transport to and handle waste at ERDF is approximately \$50/ton.

#### Modifying Criteria

#### 8. State Acceptance

The State of Washington has concurred with this amendment.

#### 9. Community Acceptance

Newspaper notices, a fact sheet, and a proposed plan were issued to support starting public comment on August 4, 1997. Several comments were received during the 30-day public comment period. The comments were generally in support of the amendment and are included in the Responsiveness Summary that is attached to this Amendment.

## **VI. SELECTED AMENDED REMEDY FOR THE ERDF**

A combination of alternatives two and four is considered the best option because these options provide for continuous remediation of the Hanford Site in accordance with current RODs and Action Memoranda and provide a cost-effective option for treatment of waste materials being sent to the ERDF under those RODs and Action Memoranda. A detailed description of the selected amended remedy is found in Section IV (Description of the Modified Remedy) of this Amended Record of Decision for the ERDF. The ARARs for this amended remedy are unchanged from those specified in the 1995 ERDF ROD.

## **VII. STATUTORY DETERMINATIONS**

The EPA and Ecology believe that the amended ROD remains protective of human health and the environment, complies with Federal and State requirements that are applicable or relevant and appropriate to this remedial action, and is cost-effective. This remedy utilizes permanent solutions to the maximum extent practicable for this site. Treatment of wastes will be addressed in the operable unit decision documents. As a consequence, the statutory preference for treatment as a principal element will be addressed in those current and future documents rather than in this ROD.

## **VIII. DOCUMENTATION OF SIGNIFICANT CHANGES**

DOE and EPA reviewed all written and verbal comments submitted during the public comment period. Upon review of these comments, it was determined that no significant changes to the amended remedy, as originally identified in the Proposed Plan, were necessary.

## **IX. RESPONSIVENESS SUMMARY**

U.S. Department of Energy  
Environmental Restoration Disposal Facility  
Hanford Site  
Benton County, Washington  
Amended Record of Decision

### **Introduction**

This responsiveness summary meets the requirements of Section 117 of the Comprehensive Environmental Response, Compensation, and Liability Act (CERCLA) as amended. The purpose of this responsiveness summary is to summarize and respond to public comments on the proposed amendment for the January 1995 Record of Decision (ROD) for the Hanford Environmental Restoration Disposal Facility. The proposed plan for the Amendment, issued on August 4, 1997, was presented for public comment on the proposed changes to components of the remedy set forth in the January 1995 ROD.

The Tri-Parties announced the issuance of the proposed plan in the community newspaper. A thirty-day comment period was provided for the public to read the proposed plan, review documents in the administrative record, and submit written comments. No request was made for a public meeting, therefore, no meeting was held. The proposed plan discussed expansion of the Environmental Restoration Disposal Facility by two additional cells and included the option of waste treatment at the facility, limiting it to stabilization and encapsulation of waste.

### **Community Involvement**

The proposed amendment was presented to the Hanford Advisory Board (HAB) and the HAB Environmental Restoration Committee in June, July, August, and September 1997.

### **Comments and Responses**

The following advice was received from the Hanford Advisory Board.

1. The HAB supports both elements of the Proposed Plan for an Amendment to the Environmental Restoration Disposal Facility Record of Decision: (a) construction of Phase II of ERDF for disposal of Hanford Site waste only, and (b) authorization for treatment of Hanford Site waste at ERDF.

Response: Thank you for your comment.

2. The HAB recommends that the DOE report the full cost for disposal of waste at ERDF including costs of design, construction, maintenance, monitoring, mitigation, and closure. U.S. DOE should use the full cost of disposal at ERDF when comparing the costs of other remediation technologies.

Response: The cost of \$30 per cubic yard noted in the Proposed Plan reflects operating costs only. When the additional costs of design, construction, transportation, operation, monitoring, and closure are factored in, the life cycle cost of the facility is approximately \$80 per cubic yard. Both of these numbers are reflected in the ROD Amendment. A formal response has been prepared to address the costs in detail and will be submitted to the HAB.

The following comments were received from the Confederated Tribes and Bands of the Yakima Indian Nation.

The Yakima Indian Nation cannot endorse the proposed ERDF expansion until a number of technical questions are answered. We expect that many of the following questions have been addressed in previous documents and could be answered by providing us with the citation and the actual document where the issues were addressed. However, in order to meet your deadline for comment of September 3, we are responding to the proposed expansion with a series of questions to be followed later by a letter accepting or rejecting the proposal depending on the answers to the questions.

Response: A formal response addressing the questions provided by the Yakima Indian Nation has been prepared by the Department of Energy (DOE) and Environmental Protection Agency (EPA). Many of the comments do not focus on the expansion of the facility. Rather, the comments deal with the facility as a whole. DOE and EPA will continue to work with the Yakima Indian Nation in resolving the concerns.

1. Do excavated soil volume estimates still match the original estimates? What are those volumes, and what is the process for feeding new information about disposal needs into ERDF containment performance requirements and waste acceptance criteria?

Response: Estimates of the total volume of waste have decreased since the ROD was published. The ROD states the following, "The total volume of waste is expected to be less than 21.4 million m<sup>3</sup> . . . ". The current estimate of total waste volume is four million m<sup>3</sup>. Risk and performance analyses were based on the higher volumes published in the ROD and were modeled at higher concentration than are actually being encountered. Thus, no plans exist at this time for updating the ERDF containment performance requirements and waste acceptance criteria. Waste acceptance criteria revisions will be performed, as appropriate and when needed, to address additional information as it becomes available.

2. What is the total amount (inventory) in cells 1&2 (volumes, contaminants, concentrations, total curies and quantities)? What is anticipated for cells 3&4? What was used as the original analysis in the RI/FS?

Response: The total volume in cells 1&2 is approximately 204,900 m<sup>3</sup> as of August 29, 1997. The total curies disposed at ERDF is approximately 1,800 Ci. This value is conservative in that where a "non-detect" is identified in the waste profile, the detection limit is used as the curie content for that radionuclide. Radionuclide and dangerous waste constituents are being tracked in a site-specific database managed by Waste Management Federal Services. Remediation is being focused first on waste sites with the highest anticipated concentrations of contaminants in the 100 and 300 Areas. Therefore, it is anticipated the total curies in cells 3&4 will be less than what will exist in cells 1&2. The original analysis used the maximum concentrations reported and assumed this concentration for the total volume of the waste being disposed in ERDF.

3. What exactly has been put into ERDF so far (soil, rubble, debris, etc.)? How is it mapped in case something specific needs to be retrieved?

Response: The predominant waste form received by the ERDF has been soil. Additionally, contaminated concrete rubble and steel debris has been received. The ERDF trench has a 30ft grid system that is used to record the location of each container or discrete objects placed in the trench.

4. What containment assumptions are most current? What updates are there on the barrier testing program? If that program is slated for discontinuance (and the probes removed), how will long-term performance be validated? Is any monitoring planned as long as the test barrier is there?

Response: The final cover will be a RCRA-compliant, Subtitle C cover that has a permeability less than that of the liner. The Hanford Prototype Barrier testing program has completed three years of field testing. EPA and DOE have agreed to continue with the testing program in fiscal year 1998 at a reduced level of monitoring. A site-wide evaluation of barrier performance needs is being done and additional funding from other programs within DOE is being discussed.

5. Do any of the following items need revisiting for analysis or underlying assumptions:  
a. The Native American subsistence scenario was not developed then--does it need to be added now? If not now, when?

Response: The risk scenarios developed for ERDF were based on current regulations and guidance for evaluating human and ecological risk. Further evaluation may be expanded to include the subsistence scenario at closure.

b. If a 500 year intruder scenario was used, we also need a 100 year intruder scenario;

Response: A performance analysis specified that inadvertent intrusion (post-closure drilling scenario) cannot occur until loss of institutional control, which was defined as 100 years. If the facility contains contaminants that are persistent beyond 100 years, and relies on passive controls for the deterrence of intruders, the time of compliance was defined as 500 years. Although the ERDF is assumed to use passive controls (making the time of intrusion 500 years post-closure for the drilling scenario), total dose calculations for the post-drilling scenario were done for 100, 300, and 500 years.

c. How does ERDF fit into the 200 Area composite source term and the entire Sitewide source term?

Response: ERDF is considered as a single source term that is integrated into the final composite analysis. The composite analysis uses the current volume estimates (see response to #1) and maximum concentrations reported in the ERDF Remedial Investigation and Feasibility Study (RI/FS). The 200 Area composite analysis is synonymous with the sitewide and assumes all areas outside the 200 Area plateau are cleaned up.

d. What kind of composite risk profile was done (including socio-cultural risks, impacts, and values)? Was anything done beyond simple dose calculations?

Response: A baseline risk assessment was conducted to determine the human and ecological impacts associated with waste disposal in ERDF under various scenarios. Risks are expressed in terms of incremental cancer risk

and hazard quotients for both radiological and non-radiological contaminants, as appropriate.

The scope of the ERDF RI/FS was expanded to address NEPA values not normally considered, such as socioeconomic and cultural resources. Socio-cultural risks were not specifically addressed

e. What is the groundwater point of compliance for ERDF? How does that POC fit into other POCs?

Response: The point-of-compliance (POC) for ERDF is the point where groundwater intersects a vertical plane projected from the surface at the edge of the facility. For the composite analysis the POC is the edge of the 200 Area buffer zone, and for the Hanford Site low-level waste burial ground it is 100 meters down gradient of the facility.

6. What is the total time frame of analysis? What is the total long-term risk profile?

Response: Both performance dose calculations and the risk analyses were done based on a time frame of 10,000 years. Because of the various scenarios considered, the reader is referred to the RI/FS and Performance Assessment for a detailed discussion of long-term risk profiles.

7. Are the original groundwater and vadose models still adequate for predicting environmental releases and waste acceptance criteria? What process is there for refining the WAC and containment performance assessments as the groundwater and vadose models are further refined?

Response: Groundwater and vadose models used in the ERDF RI/FS are still considered to be representative of predicted conditions. Characterization of the vadose zone at the ERDF site quantified both stratigraphic profiles and physical properties. Ongoing groundwater monitoring at the site has demonstrated an increase in the depth to groundwater beneath the site due to dissipation of 200 West Area mounding. Original predictions for environmental releases and waste acceptance are very conservative and therefore still considered to be well within acceptable limits being applied to ERDF waste receipt. The most stringent ERDF acceptance limits are derived primarily from the more conservative regulatory requirements (e.g., land disposal restrictions, TSCA, radionuclide waste classification) rather than by calculated risk limits.

8. What performance assumptions were used to set the original waste acceptance criteria? On what additional factors were WAC based? Were the WAC based on a composite Sitewide analysis evaluating long-term (post-closure) releases and impacts from ERDF as well as all other 200 Area and Sitewide (including the 100 Area) sources? What is the process for refining the WAC as more complete information is received?

Response: The waste acceptance criteria for radioactive constituents were developed to ensure that waste accepted for disposal could not result in potential doses in excess of the performance objectives. The primary waste acceptance criteria are radionuclide-specific concentration limits (Ci/m<sup>3</sup>) for isotopes with half-lives greater than five years and total-activity limits (Ci) for long-lived environmentally mobile radionuclides. Second, compliance with performance objectives was evaluated by estimating potential dose resulting from the disposal of the entire projected inventory of low-level waste in the ERDF. This evaluation included a long-term (post-closure) evaluation for the ERDF source term only.

A risk-based screening process and comparison to applicable or relevant and appropriate requirements was used to identify contaminants of potential concern. The risk-based screening process involved the calculation of risk-based screening concentrations that correspond to a hazard quotient of 0.1, or incremental cancer risk of  $1 \times 10^{-7}$  using residential scenario exposure parameter values. These screening values are an order of magnitude less than the Comprehensive Environmental Response Compensation and Liability Act (CERCLA) risk-based criteria.

WAC revisions will be performed, as appropriate and when needed, to address additional information as it becomes available.

9. What waste treatment is anticipated?

Response: The only treatment currently identified is for lead encapsulation. However, other waste streams may need to be treated to meet applicable regulatory limits. The most likely treatment alternative would be stabilization or encapsulation to allow the waste to be disposed of at ERDF. Thus, the Proposed Plan discusses both stabilization and encapsulation as potential treatment methods at ERDF.

10. Please provide a copy of the Safety Analysis (BHI-00370, Rev. 2).

Response: A copy was provided on September 15, 1997.

11. What are the total volume projections and how many total cells will be needed? How will DOE guarantee that only on-site waste will be disposed of, and how are the ultimate total limits determined and enforced?

Response: The total volume projections are provided in response to question #1 above. Currently, it is anticipated that a total of eight cells will be needed to accommodate this volume.

The authorization basis for the ERDF is the ROD. The ROD states that only waste originating from the remediation of operable units within the 100, 200, and 300 Area National Priorities List (NPL) sites of Hanford is eligible for disposal at ERDF. Each remediation originating waste for disposal at ERDF must have approved CERCLA authorization documentation before ERDF will accept it.

DOE has developed, and EPA has approved, the ERDF Waste Acceptance Criteria (WAC). This WAC requires a waste profile for all waste entering ERDF. This profile is reviewed by ERDF operations prior to disposal.

12. What is the process by which other projects guarantee that their wastes will be characterized adequately to be accepted by ERDF? How does ERDF know exactly what other projects are planning to send ERDF? Do the current ERDF volume estimates include those plans of other projects?

Response: According to the waste acceptance criteria (see response to #11), each waste generator must characterize their waste sufficiently to produce a waste profile. A combination of process knowledge, historic information, characterization data, and ongoing field characterization during remediation are used to profile the waste. The ERDF compares the waste profile to the waste acceptance criteria to verify that the waste is acceptable for placement in the ERDF.

All waste received for disposal in ERDF must have an approved CERCLA decision document in place. In addition, projected waste volumes from all projects are rolled up in the detailed work plan. This plan is the basis for long-range volume forecasts for the ERDF.

13. What natural resources mitigate on has been planned in response to the total area impacted by ERDF?

Response: For the current expansion, an Inter-Agency Agreement between DOE and the U.S. Department of Fish and Wildlife has been drafted and is expected to be issued by the end of September 1997. The agreement will provide the basis for planting sagebrush on naturally disturbed areas of the Arid Lands Ecology reserve. In addition, a Natural Resources Trustee Council Subcommittee has been formed to provide input to the development of the revegetation plan. Although the total area impacted by ERDF will not be known until remediation is completed, it is anticipated that any further expansions would follow a similar process.

The following comments were received from (b)(6) President of Berkeley Instruments, Inc.

1) It is unknown whether sufficient soil analysis is being done to identify the particular chemicals in contaminated soil. This leads to the following problems.

A) Clean soil may be being removed - taking up valuable and costly ERDF disposal space (I would hope that environmental restoration progress and performance is not evaluated by the volume of dirt moved).

Response: Sampling of waste sites is done prior to excavation in order to determine contaminants of concern. Field screening during excavation is done to better define the area between clean and contaminated soil and to verify the waste profile.

B) Soil with different contaminants present may be mixed. While various chemical reactions are possible, the most potentially concerning is the mixing of complexant containing soil (e.g., EDTA - tons used at Hanford) with toxic species such as heavy metals or radionuclides (e.g., Pu), thus dramatically increasing the mobility of these otherwise immobile toxic species.

Response: Reactivity is evaluated as part of the waste acceptance process for ERDF. Additionally, the double liner configuration of the facility is such that the leachate is collected during the operational period. The data collected thus far indicate that little contamination is being released from the material disposed in the facility.

The following comment was received from (b)(6), a private citizen.

I believe ERDF is a great step forward in the safe disposal of radioactive (dry) waste. I therefore recommend that two more cells for the ERDF Site be approved for construction, providing a safe storage facility thus minimizing adverse impacts to the environment.

DOE, Bechtel, and the Regulatory Agencies should be congratulated for the way this program was designed and in the way it is being carried out.

Response: Thank you for your comment.